The Usage of Chatbots in Customer Service – Usefullness and Stress as Influencing Factors on Customer Satisfaction

Abstract

Chatbots enhance the efficiency of customer touchpoints in terms of the customer experience and associated costs. However, what happens in stressful situations? This research adds stress in the Technology Acceptance Model and confirms the moderating role of stress and usefulness on customer satisfaction in customer service. The results of an experiment demonstrate that managers need to consider impact of stress when employing chatbots for daily interactions with customers.

Keywords

Chatbots, conversational agents, customer service, satisfaction, stress

Extended Abstract

Chatbots as interactive touchpoints have gained increasing attention in customer communication via websites, apps or microprograms (Thomaz et al., 2020; Araujo, 2018). Chatbots or conversational agents are defined as computer programs that communicate with users using natural language, respond automatically to language or text in a human-like manner, and execute specific commands (Kerly, Hall, & Bull, 2007;). Implemented perfectly, these conversations will be similar to those users have with their friends and family.

Managers appreciate chatbots for two major reasons: (1) Chatbots help companies maintain governance over direct customer interface. As such, they can enhance the customer experience, collect customer data, and win back margins paid to retailers and platform suppliers (Bleier, Harmeling, & Palmatier, 2019). (2) Chatbots are more cost efficient than service personnel (Lester, Mott, & Branting 2005). However, managers fear they will require a high capital expenditure and result in low customer acceptance (Verhagen et al., 2014).

Although knowledge on customer reactions to chatbots is indispensable to achieving higher customer satisfaction and effective savings, this aspect has rarely been addressed in the marketing literature (Brandtzaeg, & Følstad, 2017). Only a few authors touch on determinants such as ease of use and perceived helpfulness (Chung et al., 2018). In particular, affective determinants or stress have thus far received less attention (Zarouali et al., 2018).

Therefore, we assess in our study the satisfaction of chatbot usage in the context of stressful situations and, in turn, identify conditions when engagement with service staff may be more appropriate than chatbots. The phrasing of our hypotheses is based on the technology acceptance model (TAM) (Davis, Bagozzi & Warshaw, 1989). The first hypothesis describes the relationship between perceived usefulness and satisfaction:

> *H1: Perceived usefulness moderates the relationship between the use of chatbots and customer satisfaction. Under a higher usefulness state, the impact of chatbots on customer satisfaction with a service is higher.*

The second hypothesis also aims to broaden the range of investigated determinants of chatbot acceptance. Particularly, the role of stress or stressful situations has been neglected in the literature so far. This lack is surprising since, for decades, a large body of research on stress has shown that individuals tend to change their behavior according to particular situations, wishes,

and goals in their interactions with companies and their service staff (Moschis, 2007; Singh & Duque, 2012). As often confirmed in the context of service encounters we focus on acute stress. Acute stress is defined as "discrete, observable events which are thought to be threatening because they represent change" (Wheaton, 1990: 210). We add to the literature by proposing the following hypothesis:

> *H2: Stress moderates the relationship between the use of chatbots and customer satisfaction. Under a negative stress state, the impact of chatbots usage on customer satisfaction is lower.*

Two experiments were conducted to test these hypotheses. Both used a 2x2 between-subjects design (Hair et al., 2018). Our sample comprised 220 students from a German university, including 116 women and 104 men. The average participant age was 23.8 years.
Probands were invited to an IT-laboratory of the university and were asked to participate in scenarios describing the booking of a train trips. After a short introduction, participants started a real conversation via phone. A first group talked to a human call center agent. A second group was pretend to talk to a chatbot. In both cases, participants talked to a human call center agent. However, in the case of the chatbot we adjusted the voice via a voice changer. The voice sounded machine-made.
In the first experiment participants should either book or refund a ticket. Based on the findings of a pretest, chatbots are expected to fulfil the booking task easily. In a second scenario participants were asked to refund a ticket, a task which requires more interactional elements (e.g. reason for refund). We hypothesized that participants are more satisfied in a scenario with a higher degree of usefulness. The results strongly support this hypothesis. To test the significance of the differences, a 2x2 ANOVA using customer satisfaction as the dependent measure revealed the desired interaction effect of the usefulness ($F(1; 219) = 46.252$; $p<.001$). The results indicated that a lower perceived usefulness reduces the customer satisfaction with the chatbots. Our results also showed that the level of the customer satisfaction of the participants, who were pretend to talk to a chatbot, is lower than the participants, talking to a human service agent ($F(1; 219) = 26.578$; $p<.001$). This is surprising as from a rational standpoint it does not matter whether participants talked to the chatbot or the human agent.

In the second experiment we examined the impact of acute stress as a moderator. The literature offers little guidance regarding methods to manipulate acute stress (Durante & Laran, 2016). According to Moschis (2007) we changed the stress level by giving the subjects a strict time limitation of four minutes for the booking process. As proposed by Herr et al. (2012), we did not include the manipulation checks in the experiment as this would have biased the behavior. We conducted a pretest measuring the skin response rate and using a self-report in the actual experiment (Meier & Wilken, 2014). Two electrodes measured the skin conductivity caused by sweat. Stress leads to higher degree of perspiration, and, in turn, increases skin conductivity. As a result, participants in the stressful scenario have more skin conductions than in a neutral condition. The difference was significant ($F(1, 23)=10.42$; $p<.001$).

The results of the second experiment indicated that a high stress level generally reduces the customer satisfaction with the service ($F(1; 219)=20.493$; $p<.001$). More interestingly, the interaction effect is also tested significantly ($F(1; 219)=9.254$ $p<.001$). This means that stress has a stronger negative impact on customer satisfaction in case of chatbots usage compared to human agents.

Research in the area of chatbots usage just started. Although our study suffers from many limitations, results give little guidance on user acceptance. Using chatbots to make customer touchpoints more efficient should be assessed more deeply by reflecting associated service situations.

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